



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: MULTI-FUNCTION HEADREST FRAME FOR VEHICLE					
(57) Abstract					
<p>A multi-function headrest frame for automobile seats, in which the lower end of the main body (1) is shaped in a bend (11); the upper board (17) of said main body (1) has a speaker hole(s) (10) and an air-hole (5) for an air-purifier; long insertion holes (12, 12') are formed on said bend (11) for insertion of headrest support poles (2, 2'); the upper end of the lower wall (18) of said long insertion holes (12, 12') is wrapped with an elastic member (16); the bent upper end (19) of said support poles (2, 2') is inserted in fixing inlets (13, 13') punched in between said long insertion holes (12, 12'), and is either fixed onto said lower wall (18) by a bolt (15) or fixed, when said lower wall (18) between said long insertion holes (12, 12') is open, to the perpendicularly extended wall (18') by a bolt (15'); so that a speaker unit(s) (20), an air-purifier (21), and other devices can be installed while support poles (2, 2') can be installed; to ensure multiple functions together with excellent elasticity to the headrest.</p>					

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## Multi-Function Headrest Frame For Vehicle

## Field of Invention

5        The present invention relates to a headrest frame for vehicles, which is fixed on top of the backboard of a seat against which a driver or a passenger can rest his head, and especially to a multi-function headrest frame for automobile seats, which frame is made of a single body of comfortable elasticity and can accommodate a built-in audio speaker and  
10      also a built-in air-purifier.

## Prior Art

15       A conventional headrest frame comprise a structure, wherein two flat support board 170, 170' have a grip 300 projecting inside, an arc for hanging 120 for fitting of support poles 20, 20' cut in the bent bottom end 110 of said support boards 170, 170', and a joint 140 wrapped fixedly the bent upper end 190 of said support poles 20, 20' corresponds with said grip 300 to fix with a bolt 150' through a nut hole 150. With such a structure  
20      they have problems in that big noises arise when the angle of the headrest is shifted, the durability of the body is not good enough, the body easily bending or breaking at a very little shock from outside, the headrest merely serves as a headrest absorbing shock only very little at the time of an accident but has little elasticity, and no possibility of additional use for  
25      other purposes.

## Brief Description of Drawings

30       Fig. 1 is an exploded fragmentary perspective view of the headrest frame of the present invention.

Fig. 2 is a vertical section view of Fig. 1 along the A-A' line.

35       Fig. 3 is an exploded fragmentary perspective view of the headrest frame of the present invention with another fixing part.

Fig. 4 is a vertical section view of Fig. 3 along the B-B' line.

Fig. 5 is a fragmentary broken view of a conventional headrest frame.

### Summary of Invention

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The present invention is intended to solve such problems as given above. The headrest frame of the present invention has the body of frame enveloped by sponge cover, which frame body is of such a structure that audio speaker (s) and an air-purifier can be fitted to it so that the rider can enjoy stereo music at a close distance and clean purified air, too. By virtue of the frame being of a single board structure, being bent in the lower end and being wrapped a circumference of inserting holes for the support poles in an elastic padding material, it is made easy to fit the support poles on both sides on the frame. Even when the headrest shivers at a shock its elasticity is good thanks to the elastic padding material which wrapped the circumference of the holes for the support poles, and the noise at the time of shifting the angle of the headrest is minimized. All these features of the present invention will be clarified in the following detailed description to be made by referring to the attached drawings at need.

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### Detailed Description of Invention

The present invention is composed of a structure as is given below.

20

In the multi-function headrest frame for automobile seats composed of a main body (1) of a headrest and two support poles, on two sides of the upper board 17 of the main body 1 of the frame, there are insertion holes 10 punched for insertion of a speaker(s) and an air-purifier;

25

an air-holes 5 is punched in said upper board 17 between the two insertion holes 10;

the lower side of the main body 1 of the headrest is shaped in a bend 11 in the form of a step;

two long insertion holes 12, 12' are punched on two sides of said bend 11 for acting as resonance holes and also serving as insertion holes for two support poles 2, 2' of the headrest;

5 Between said two long insertion holes 12, 12' on said bend 11 a fixing part 30 is made to fix the bent upper end 19 of said support poles 2, 2';

10 at a proper position between said long insertion holes 12, 12' on said bend 11 fixing inlets 13 are punched for fixing in of a plastic-made joint 14 wrapped the bent upper end 19 of said support poles 2, 2',

15 wherein either a bolt hole 15a is drilled in the lower end wall 18 of said bend 11 to meet a bolt hole 15 in the lower side of said joint 14 corresponding with it,

20 or the lower end wall 18 of said bend 11 is open between said long insertion holes 12, 12', provided that a bolt hole 15b is drilled in the perpendicularly extended wall 18' of said body 1 at a spot corresponding with the bolt hole 15 in the lower part of said joint 14;

25 the upper end of the lower wall 18 of said long insertion holes 12, 12' for insertion of said support poles 2, 2' is wrapped with an elastic member 16;

30 the lower end of said support poles 2, 2' are inserted in said long insertion holes 12, 12', said joints 14 on the upper end of said support poles 2, 2' are inserted in said inlet 13 and said bolt hole 15 of said joint 14 is corresponded to said bolt hole 15a said lower end wall 18 of said bend 11 to screw by a bolt (15'); or

35 in case the lower wall 18 of said bend 11 is open without making inlets 13 between said long insertion holes 12, 12' of said bend 11 and the lower end of the main body 1 of the frame is extended, a bolt hole 15b in the perpendicularly extended wall and said bolt hole 15 of said joint 14 are screwed by said bolt (15') to fix said joint 14 on said extended wall surface 18' of said main body 1;

on left and right surrounding surfaces of said lower bend 11 auxiliary resonance holes are punched 12a, 12a' for a speaker;

5 in said speaker hole 10 either a speaker unit 20 or an air-purifier 21 is installed selectively; and

in case a speaker unit 20 is installed on each side, an air-purifier 21 is installed at the back of said air hole 5 for an air-purifier.

10 Of the unnamed numbers in the above, 31 indicates the sponge to cover the main body 1 of the frame, and 32 the speaker hole cut out in the sponge.

15 Operations and effects of the present invention described above are further explained below:

When a speaker 20 is installed in said speaker hole 10 punched in said upper board 17 of said main body 1 and it is connected with the car audio set, the sound and tremor are found excellent,

20 because said speaker 20 is installed at the back of said main body 1 the sound effects are greatly improved due to said long insertion holes 12, 12' in said lower bend 11 of said main body 1, which also serves as resonance holes, and also due to said auxiliary resonance holes 12a, 12a' punched on both sides of said lower bend 11, which all let sounds of said speaker flow through;

25 particularly if speaker units 20 are installed in speaker holes 10 on both sides much cleaner sounds can be enjoyed because of the closer proximity of each ear to a source of sound;

30 when said air-purifier is installed at either speaker hole 10 or the back of said air-hole 5, then it will not be observed from outside, and yet, being situated near a rider, it can display excellent air-purifying performances by sending off purified air direct to him through said long insertion holes 12, 12' and said auxiliary resonance holes 12a, 12a', or said air-hole 5.

Because said lower bend 11 is formed on the underside of said main body 1 this can reinforce the durability of said upper board 17, which is flat, of said main body 1 of the frame;

5 support poles 2, 2' are inserted in said long insertion holes 12, 12', and said plastic joint 14 can either be inserted in said fixing inlets 13 and fixed to said lower bend 18 by said bolt 15' driven into said bolt holes 15, 15a or be fixed by said bolt 15' driven into bolt holes 15, 15b on said perpendicular extension wall surface 18' open instead of said fixing inlets  
10 13 between said long insertion holes 12, 12' on said lower bend 11 of said main body 1, fixing being much easier this way than otherwise;

no noise is caused at the time of readjustment of angles;

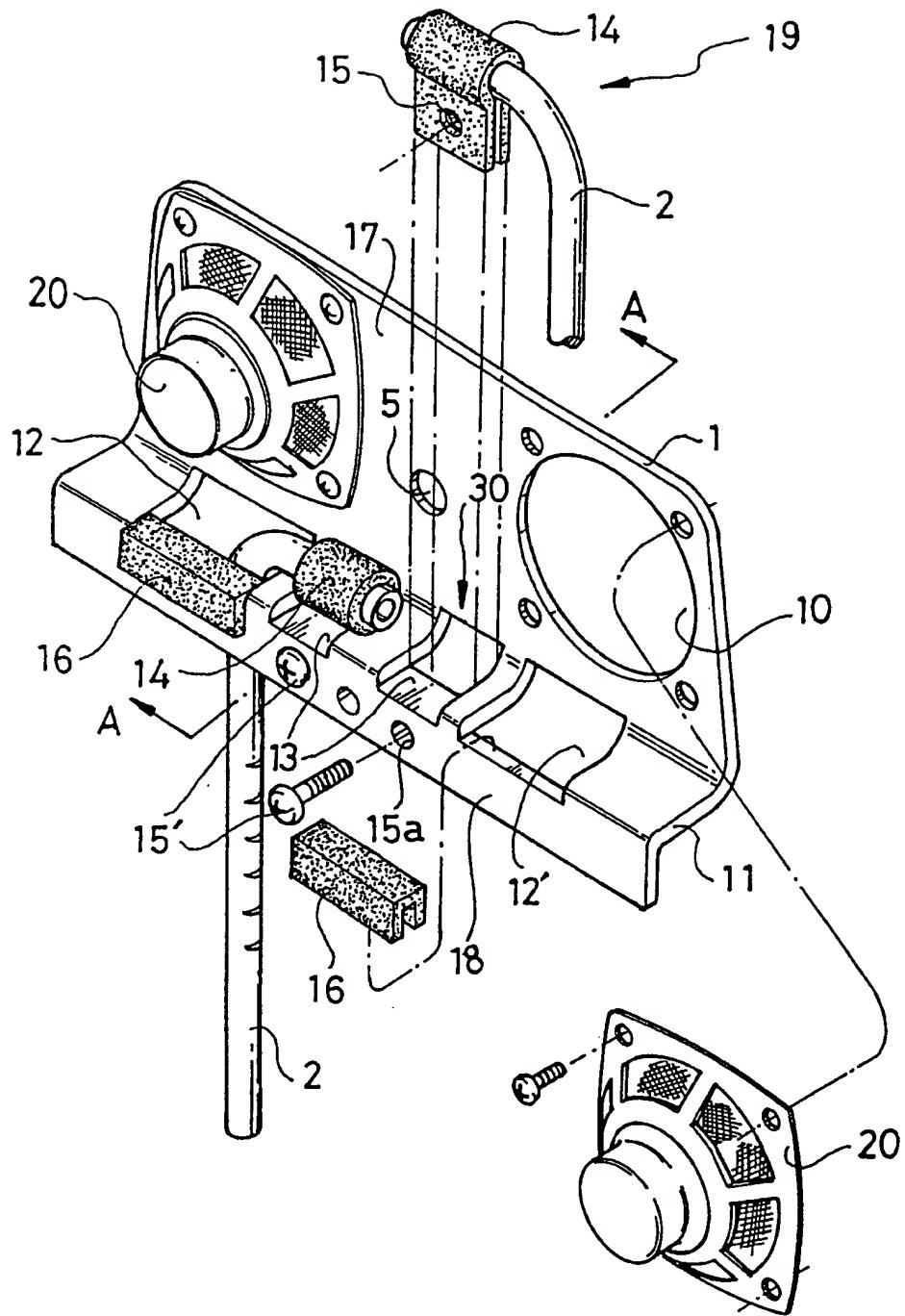
15 Said elastic member 16 wrapping circumference of said long insertion holes 12, 12' will serve as buffer between said upper board 17 of said main body 1 and support poles 2, 2' at a time of accident, displaying redoubled shock-absorption effects.

20 As above, the present invention is easy of assemblage, its durability excellent, and has a redoubled effects as a buffer absorbing shocks, as well as a capacity of getting speakers and an air-purifier also installed inside.

## CLAIMS:

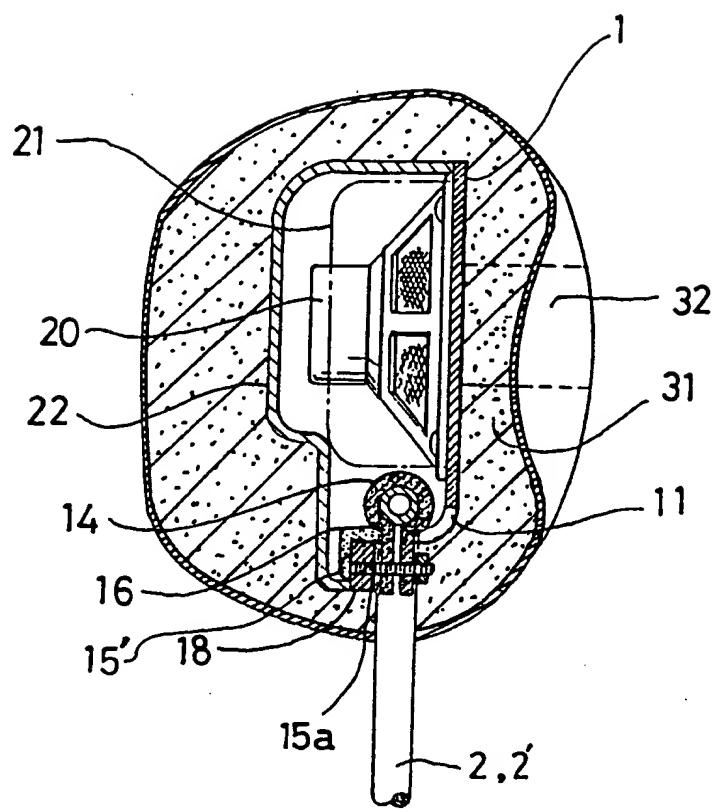
1. In a multi-function headrest frame for vehicles, comprising a main body 1 and two support poles 2, 2', the multi-function headrest frame characterized by a step-form lower bend 11 shaping the lower end of said main body 1, a speaker hole 10, an air-hole 5 for an air-purifier formed in the upper board 17 of said main body 1, long insertion holes 12, 12' in said lower bend 11 for insertion of said support poles 2, 2', and fixing inlets 30 prepared for fixing of the bent upper end 19 of said support poles 2, 2'.  
5
2. A multi-function headrest frame for vehicles according to Claim 1, in which a speaker hole 10 is punched at the right and left sides of said upper board 17 of said main body 1, said air-hole 5 for an air-purifier 21 is punched in the middle between two speaker holes 10, and in the 15 surrounding face of both ends of said lower bend 11, auxiliary resonance holes 12a, 12a' are punched.
3. A multi-function headrest frame for vehicles according to Claim 1, in which on the upper end of the lower wall 18 forming said long 20 insertion holes 12, 12' for insertion of support poles 2, 2' an elastic member 16 is wrapped.
4. A multi-function headrest frame for vehicles according to Claim 1, in which said fixing section (30) comprises by preparing fixing inlets 13, 25 13', in proper position between said long insertion holes 12, 12' in said lower bend 11, for insertion fixedly of said joints 14 which wrapped the bent upper end of support poles 2, 2', and by punching a bolt hole 15a in said lower wall 18 of said bend 11 to correspond with a bolt hole 15 punched in said joint 14.  
30
5. A multi-function headrest frame for vehicles according to Claim 1, in which said fixing section (30) comprises by opening said lower wall 18 of said step-form bend 11 between long insertion holes 12, 12' in said lower 35 bend 11, and by punching a bolt hole 15b in said perpendicularly extended wall 18' of said main body 1 to correspond with said bolt hole 15 of said joint 14 wrapped the upper bent end of support poles 2, 2'.

**FIG. 1**



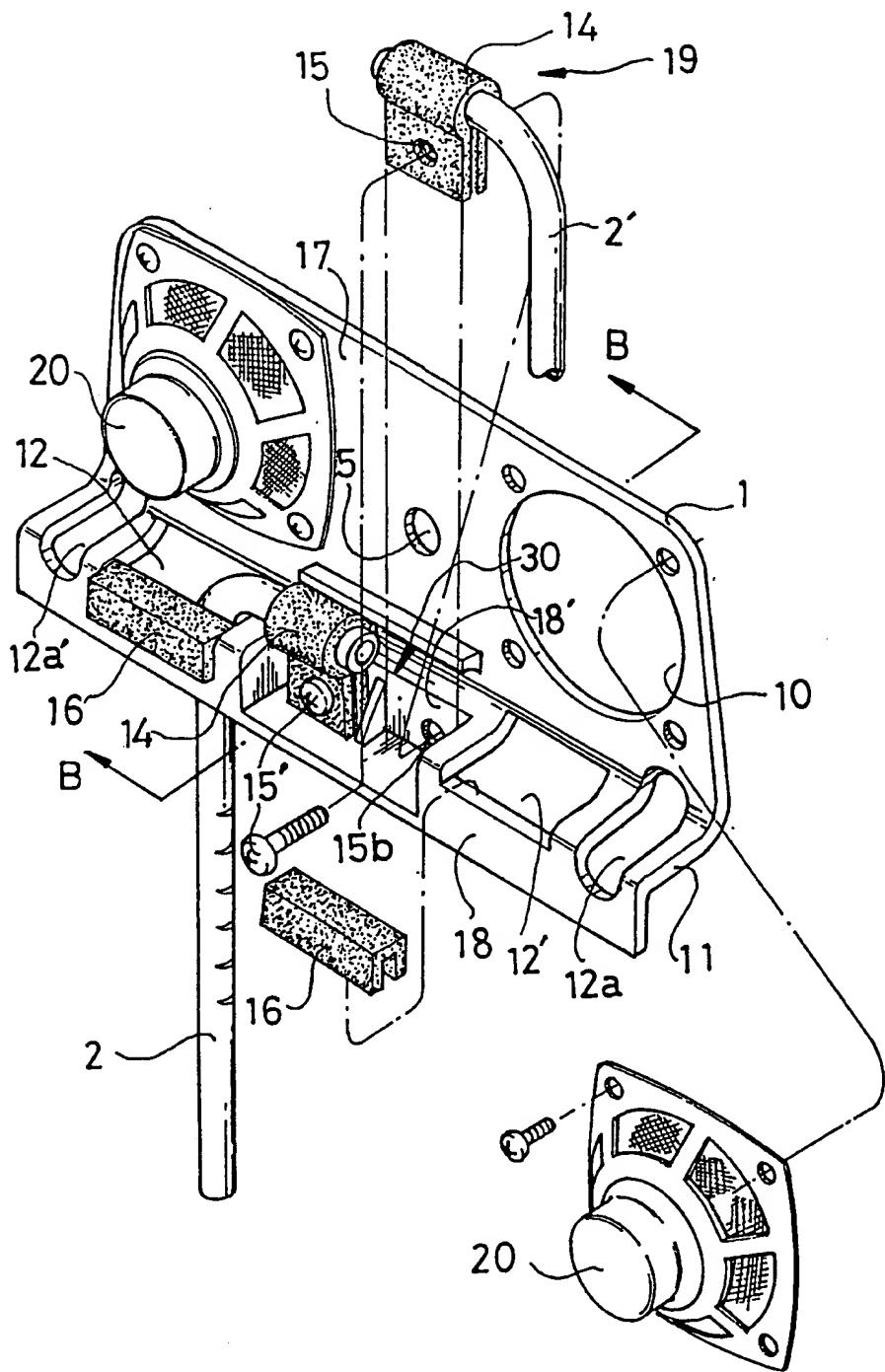
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FIG. 2



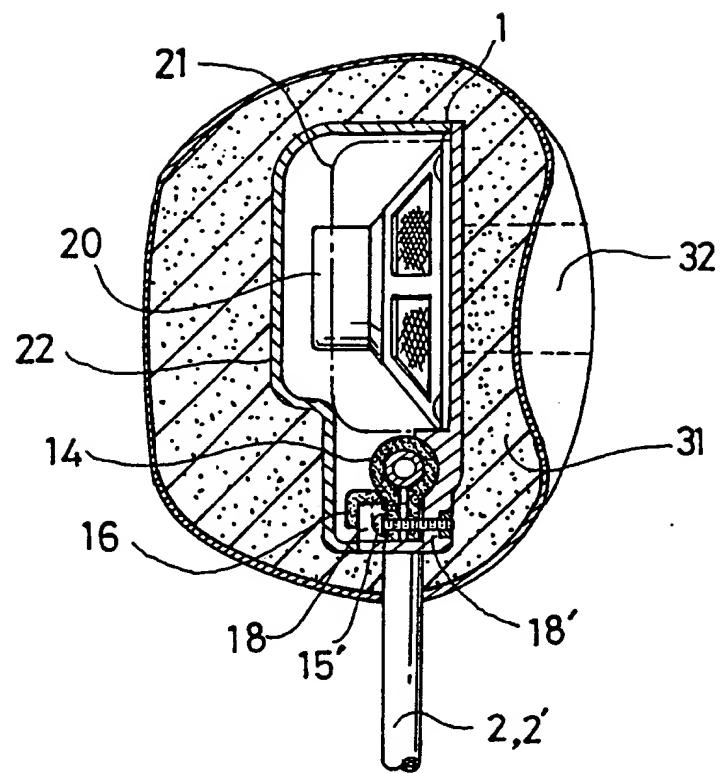
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FIG. 3



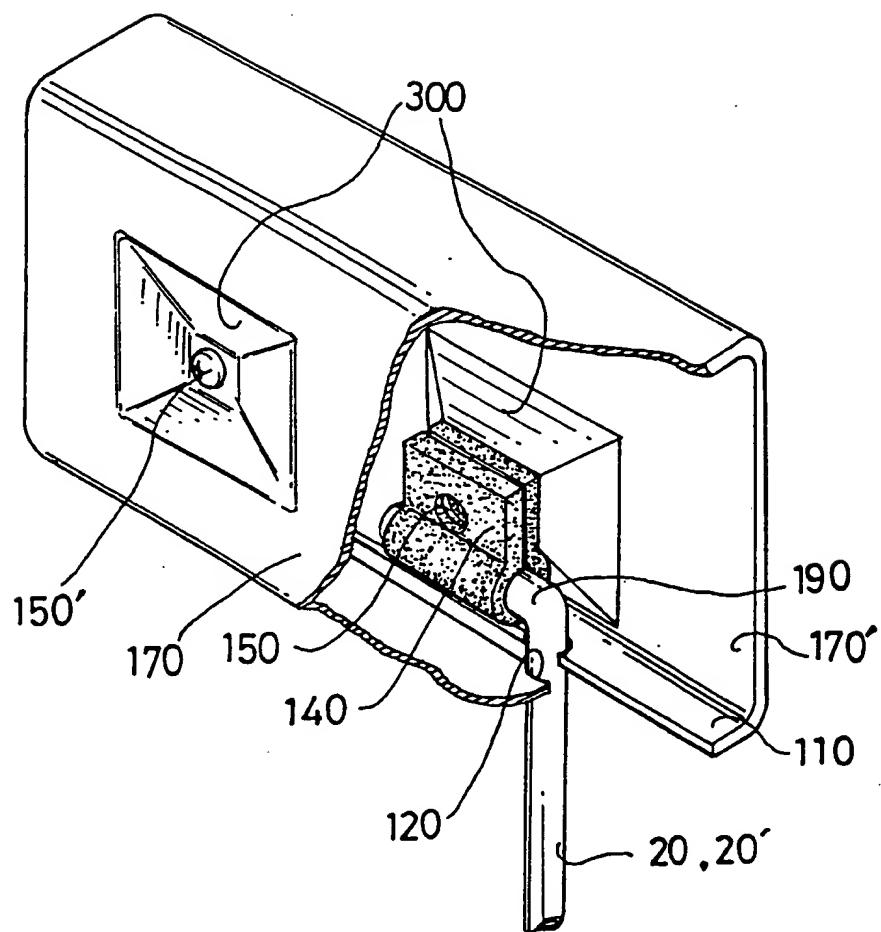
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FIG. 4



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FIG.5



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR 94/00003

## A. CLASSIFICATION OF SUBJECT MATTER

IPC<sup>5</sup>: B 60 R 11/02; B 60 N 2/48

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC<sup>5</sup>: B 60 N 2/48; B 60 R 11/00, 11/02; A 47 C 7/62, 7/72

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PATDPA, WPIL

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE, A1, 2 528 988 (BLAUPUNKT-WERKE GMBH) 27 January 1977 (27.01.77), claim 1; fig.1,2.	1
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P,A	WO, A1, 93/01 951 (CHO,CHUL,SOO) 04 February 1993 (04.02.93), totality.	1
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